

during the hours of restricted visibility (with a few minor exceptions).

(2) A surprisingly high correlation coefficient of $+0.84$ exists between the number of hours of restricted visibility and wrecks during these hours. It is realized that the proper interpretation of a correlation coefficient is one of the most difficult problems in the entire field of statistical analysis; however, it is generally accepted among statisticians that "coefficients above 0.70 give almost certain evidence of correlation, and any above 0.50 are ordinarily significant", and the above direct coefficient therefore indicates an actual correlation of the variables.

It therefore seems that visibility restrictions should be considered when studying the causes, and means of preventing, auto mishaps. It is the hope of the writer that this article will be of value in the fight being made by the press, civic clubs, and others to reduce the startling number of wrecks now occurring.

TABLE 1

	X	Y		X	Y
October 1930.....	170	21	November 1932.....	105	9
November 1930.....	199	26	December 1932.....	314	30
December 1930.....	147	17	January 1933.....	86	6
January 1931.....	109	5	February 1933.....	175	9
February 1931.....	147	16	March 1933.....	80	8
March 1931.....	139	9	April 1933.....	100	8
April 1931.....	151	15	May 1933.....	43	7
May 1931.....	89	13	June 1933.....	17	1
June 1931.....	27	1	July 1933.....	49	2
July 1931.....	37	3	August 1933.....	31	3
August 1931.....	71	7	September 1933.....	72	6
September 1931.....	19	3	October 1933.....	72	3
October 1931.....	98	7	November 1933.....	239	17
November 1931.....	385	21	December 1933.....	206	22
December 1931.....	222	16	January 1934.....	240	13
January 1932.....	183	30	February 1934.....	243	21
February 1932.....	205	18	March 1934.....	309	30
March 1932.....	181	11	April 1934.....	149	10
April 1932.....	121	7	May 1934.....	150	10
May 1932.....	138	6	June 1934.....	78	5
June 1932.....	62	9	July 1934.....	135	15
July 1932.....	24	1	August 1934.....	112	12
August 1932.....	16	5	September 1934.....	250	26
September 1932.....	84	5			
October 1932.....	128	12	Total.....	6,506	557

WEATHER AND PEARS IN NEW YORK STATE

By W. A. MATTICE

[Weather Bureau, Washington, January 1935]

Since the locale of the heaviest pear production in New York is concentrated in the Hudson Valley and the western lake sections, a group of stations was chosen in this region in order to cover the territory adequately. The data for the previous year's meteorological data were taken from the Climatological Data of the Weather Bureau and represent averages for the entire State. The weekly data were computed for selected stations in the

number of original coefficients was around 90, and out of this number 24 were selected as being of enough significance to use. The highest single coefficient used in the starting process was $+0.59$.

There are eight variables selected as the result of the trial computations, and the final multiple coefficient is $+0.97$. After the final computations of production by Kincer's method, a multiple coefficient was obtained following the method outlined by Wallace and Snedecor.² This gave the regression equation as follows:

$$X = 57.95a + 1.32b + 13.74c - 11.05d + 9.35e + 19.89f + 3.84g + 1.84h - 805.35$$

where X is the estimated yield and a is the weekly average rainfall for the week ending June 20; b is the weekly percent of possible sunshine for the week ending May 2; c is the State average rainfall for September of the preceding year; d is the monthly State rainfall for August of the preceding year; e is the monthly mean temperature for the State as a whole for June of the preceding year; f is the State average rainfall for May of the preceding year; g is the weekly mean temperature for the week ending March 14; and h is the weekly mean temperature for the week ending April 18.

Thus, the computations of production are all based on weather data well in advance of harvest. It is difficult to establish particular reasons for the significance of the various elements, except in a general way; for instance, the period of mean temperatures for the weeks of March 14 and April 18 may have some significance as regards blooming or setting. The rainfall of June 20 may be important as regards the sizing of the fruit. The previous year's data probably are significant as the fruit buds of the following year may depend largely on the weather when they are forming.

Figure 1 shows the actual and computed yields for the entire period, 1911-30. It will be seen readily that the weather is apparently a major factor as regards the production of pears. In the graph the last four ciphers of the production figures have been omitted for clarity in reproduction and also to facilitate computations in the actual work.

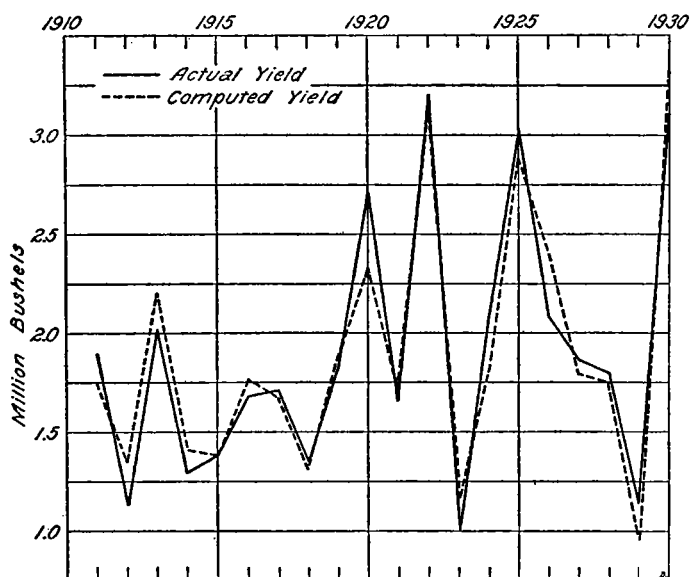


FIGURE 1.—Actual and computed production of pears in New York State.

areas of heaviest production, both regular Weather Bureau and cooperative stations. Sunshine data are for the regular Weather Bureau stations only.

The method used in computing the final correlation was that developed by Kincer¹ and scarcely needs further elaboration. The original single coefficients used in this study covered many phases of the weather, ranging from monthly mean temperatures for the State as a whole to weekly means of temperature, rainfall, and sunshine. Relative humidity was also used in the study, but no significant relationships were discovered. The total

¹ Kincer, J. B., and Mattice, W. A. Statistical correlations of weather influence on crop yields. Mo. Wea. Rev., February 1928, vol. 56, p. 2.

² Wallace, H. A., and Snedecor, Geo. W. Correlation and machine calculation. Iowa State College, vol. 23, no. 35, Jan. 28, 1925.